

## CONTENTS

Preface

vii

## THEORY AND IMAGES

D. Wolf, Structure of ionic interfaces from an absolutely convergent solution of the Madelung problem	3
R.H. French, R.M. Cannon, L.K. DeNoyer and Y.-M. Chiang, Full spectral calculation of non-retarded Hamaker constants for ceramic systems from interband transition strengths	13
D.A. Bonnell, B. Huey and D. Carroll, In-situ measurement of electric fields at individual grain boundaries in $\text{TiO}_2$	35
S. Stemmer, S.K. Streiffer, F. Ernst, M. Rühle, W.-Y. Hsu and R. Raj, Domain configurations in ferroelectric $\text{PbTiO}_3$ thin films: The influence of substrate and film thickness	43

## ELECTRICAL PROPERTIES OF INTERFACES OF SINGLE PHASE MATERIALS

J. Jamnik, J. Maier and S. Pejovnik, Interfaces in solid ionic conductors: Equilibrium and small signal picture	51
I. Riess, <i>pn</i> junctions in mixed ionic-electronic conductors induced by chemical and electrical potential gradients	59
F. Greuter, Electrically active interfaces in $\text{ZnO}$ varistors	67
J.-R. Lee and Y.-M. Chiang, Bi segregation at $\text{ZnO}$ grain boundaries in equilibrium with $\text{Bi}_2\text{O}_3$ - $\text{ZnO}$ liquid	79
R. Waser, Electronic properties of grain boundaries in $\text{SrTiO}_3$ and $\text{BaTiO}_3$ ceramics	89
S.K. Wonnell and L.M. Slifkin, Subsurface ionic space charges in silver chloride and silver bromide	101
M. Kleitz, L. Dessemond and M.C. Steil, Model for ion-blocking at internal interfaces in zirconias	107
W.B. Mattingly and R. Raj, Measurement of oxygen activity modulated space charge potential at metal-ceramic interfaces using a CHEMFET with epitaxial $\text{LaF}_3$ electrolyte	117
L. Schneider-Störmann, M. Vollmann and R. Waser, Grain-boundary decorated titanate ceramics: Preparation and processing	123
N. Wilcox, V. Ravikumar, R.P. Rodrigues, V.P. Dravid, M. Vollmann, R. Waser, K.K. Soni and A.G. Adriaens, Investigation of grain boundary segregation in acceptor and donor doped strontium titanate	127

## ELECTRICAL PROPERTIES OF INTERFACES IN HETEROGENEOUS SYSTEMS

J. Maier, Defect chemistry in heterogeneous systems	139
A. Bunde, Application of percolation theory in composites and glasses	147
B.C.H. Steele, Interfacial reactions associated with ceramic ion transport membranes	157

*Contents*

H.-D. Wiemhöfer, Sensing effects at gas–solid interfaces	167
K.-K. Baek and H.L. Tuller, Atmosphere sensitive CuO/ZnO junctions	179
F.-H. Lu, M.L. Newhouse, R. Dieckmann and J. Xue, Platinum – a non-inert material reacting with oxides	187
St. Adams, K. Hariharan and J. Maier, Interface effect on the silver ion conductivity during the crystallization of AgI–Ag <sub>2</sub> O–V <sub>2</sub> O <sub>5</sub> glasses	193
L.J. Gauckler and K. Sasaki, Ionic and electronic conductivities of homogeneous and heterogeneous materials in the system ZrO <sub>2</sub> –In <sub>2</sub> O <sub>3</sub>	203
N. Nicoloso, A. LeCorre-Frisch, J. Maier and R.J. Brook, Conduction mechanisms in RuO <sub>2</sub> -glass composites	211

**CHEMICAL EFFECTS AT INTERFACES**

M. Martin, P. Tigelmann, S. Schimschal-Thölke and G. Schulz, Solid state reactions and morphology	219
A.T. Fromhold, Jr., Space-charge modification of the ionic currents for oxide growth	229
R. Subramanian, E. Üstündağ, S.L. Sass and R. Dieckmann, In-situ formation of metal–ceramic microstructures by partial reduction reactions	241
M.S. Whittingham, J.-D. Guo, R. Chen, T. Chirayil, G. Janauer and P. Zavalij, The hydro-thermal synthesis of new oxide materials	257
B. Sapoval, Linear and non-linear behavior of fractal and irregular electrodes	269
A.I. Rusanov, Interfacial thermodynamics: Development for last decades	275
Author index	281
Subject index	285